1 Obstacles Faced in the Classical Training System: Why Is There a Need for Newer Systems?

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Take-Home Message

Times have changed, some may have the gift to become an excellent surgeon, but it is possible to raise a surgeon with proper training.

1.1 Introduction and Statements

A surgeon's anatomy is multifaceted. To be an experienced surgeon, one requires a depth of cognitive knowledge, an appropriate surgical judgment, and an ability to act quickly but thoughtfully and, when necessary, in a decisive manner (Wanzel et al. 2002). The surgeon must be dedicated and perceptive, have spontaneous compassion, and be a good communicator. Surgeons should be excellent in surgical craftsmanship to perform particular technical tasks. A contemporary concept of surgical education requires all to be included in a program from the standpoint of educational objectives, educational curricula, and assessment mechanisms.

Surgical residency programs have a history of almost 100 years and the structure has not changed appreciably (Bell 2004). William S. Halsted established a graduate training program for surgeons based on the German System at the Johns Hopkins Hospital. When the American Board of Surgery was organized in 1937, the Halsted triad of educational principles was the goal of the founders: knowledge of the basic sciences, research, and graduated patient responsibility for the resident (Sealy 1999). Halsted's system was a pyramidal structure characterized by indefinite length, vigorous competition for advancement leaving only one resident at the pinnacle and one chief of service.

Traditional surgical training based on Halsted's program was described as cruel to patients and inexcusably demanding of residents with little emphasis on education (Pories 1999). The system resulted in success only when the resident was bright, devoted to care, and technically capable and failed when

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residents were "average" or when the problem was complex. Despite the inferior conditions for the residents, residents learned to bond, to share knowledge, and to work as a team. Many in that generation became the pioneers of surgery, immunology, molecular biology, and technology. However, in some institutions, only 20 % of the residents completed their program of their initial choice; the rest had to move to inferior programs.

Times have changed and extrinsic conditions are influencing ways in which trainees learn.

1.2 Economy-Driven Patient Care

Fast pace of innovation in surgical techniques, combined with patient safety issues, limited operating room resources, and limited resident work hours, has yielded new paradigms for surgical education (Morris et al. 1993).

1.3 Liability Issues

Surgeons as part of the medical practitioners are no longer employers. They are seen as providers to a system and no longer considered the ultimate decision makers in the flow charts of patient care. Unfortunately, decisions are based on health economics driven by the payers of the health care. As a consequence of these developments, surgery settings have moved from large hospitals to smaller outpatient surgery clinics where costs are relatively lower. However, outpatient surgical clinics are far from being an ideal surgical training setting.

As a consequence of a combination of factors such as society evolution, increase in public awareness, and soaring health-care costs, physicians' responsibility for their malpractices has increased unrelated to their income. The surgeon has financial issues at stake in addition to the responsibility inherent to the nature of the profession. This is one more reason why a surgeon should not take the responsibility of a patient before he is fully proficient.

1.4 Limited Working Hours

Health policies and workers' regulations in certain regions limit working hours. European Working Time Regulation on numbers of hours in which surgical trainees are available to be taught means that exposure to clinical materials and operating opportunities is restricted (O'Neill et al. 2002; Wirth et al. 2014).

1.5 Rapid Advances in Surgical Techniques

Surgery in the current era cannot be performed without instruments unlike the era when the classical teaching methods were set. Most of the instruments are universal and used throughout training. However, certain instruments or devices are unique to the surgery performed and the resident has to get familiar with them prior to the operating room.

1.6 Evolution of the Trainee and the Trainer

Unlike the times of Halsted's program, current residents are products of a society where demanding training is considered as a rightful claim, and trainers are expected to be more active in teaching compared to previous terms. As adult learning principles are integrated more into surgical training, individual characteristics of trainees are assessed for a better and more effective training. Recent data has shown that learners have preferences for the ways in which they receive and process information. The VARK model categorizes learners as visual (V), aural (A), read/write (R), and kinesthetic (K) (Kim et al. 2013).

1.7 Evolution of Information Technology in the Digital Era

Digital Age has influenced medical practice along with how information is transferred. Medical and surgical training is one of the areas

that advances in information technology (IT) had its impact on. Out of all, residents who are the recipients of the training had their development within the Internet age. Various combinations of training are under question such as the role of medical students in the training of junior residents (Wirth et al. 2014). These folks are dynamic, lenient toward faster pace in exchange of information, and aware of the changes around. They are well informed. In addition to the recipient, means of training is more different than before, i.e., simulation through virtual reality did not exist in Halsted's times. Internet has reformed not only medicine but the whole humanity. Researches are using benefits that the modern age is offering us. In addition to the changes within our field, a lot of changes have taken place in those related to education. There are well-developed concepts in educational psychology that may be used in developing improved methods to assess and train prospective surgeons.

Conclusion

Finally, we are able to make a clear description of the fundamentals of surgical training that did not exist a century ago (Thomas 2008):

> Clearly defined selection criteria
> An efficient, fair and transparent selection process
> A "fit for purpose" learning environment
> Appropriate access for trainees to clinical practice
> Trained motivated trainers
> An integrated progression of learning
> Effective and objective assessment of competency progression

We, physicians, while following guidelines provided to us by our masters and sustaining the soul of our profession, will be able to generate successful surgeons for the future.

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